UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,094	12/17/2001	Xuemei Ouyang	US 010665	2441

			EXAMINER
24737 7590 01/12/2007			MOORE JR, MICHAEL J

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ART UNIT	PAPER NUMBER
2616	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

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PTOL-90A (Rev. 10/06)

	Application No.	Applicant(s)
Office Action Summary	10/023,094	OUYANG ET AL.
	Examiner	Art Unit
	Michael J. Moore, Jr.	2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _20 October 2006_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-4, 6-19 and 21-26_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _9-15_ is/are allowed.

6)☒ Claim(s) _1,4,6,7,16-19 and 24-26_ is/are rejected.

7)☒ Claim(s) _2,3,8 and 21-23_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _06 December 2005_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some *   c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2.   This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

3.   Claims **1, 4, 6, 7, 16-19, and 24-26** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Malkamaki (U.S. 2002/0172208) in view of Lee et al. (U.S.

6,882,660) (hereinafter "Lee").

Regarding claim **1**, *Malkamaki* teaches the reception of various physical

channels used to convey data blocks (received packet) and respective sequence

numbers by a PHY module 12c (first storage medium) as spoken of on page 3,

paragraph 34.

Malkamaki also teaches the determining of whether a received data block

(packet) is a retransmitted data block by comparison of the sequence number (field) of

the received data block to sequence numbers (corresponding field) of previously

received data blocks stored in a soft combining buffer (second storage medium) as

spoken of on page 4, paragraph 36, lines 13-26.

Malkamaki does not explicitly teach the demodulation of received packets to be

stored in a first storage medium.

However, Malkamaki does teach the use of an appropriate modulation and

coding scheme (MCS) for data to be transmitted to a user terminal as spoken of on

page 4, paragraph 35, which implies that modulation and demodulation of data is

performed.

Also, Lee teaches a demodulation unit 222 in Figure 2 that demodulates received

radio data as spoken of on column 4, lines 48-51.

These references are considered to be analogous art in that they are both

concerned with data recovery using ARQ.

At the time of the invention, it would have been obvious to someone of ordinary

skill in the art, given these references, to combine the demodulation teachings of Lee

with the system of Malkamaki in order to provide a well-known signal processing

method in wireless communication.

Malkamaki also does not teach that if the received packet is a retransmission,

combining the received packet with a previous packet using a maximum ratio combining

method.

However, *Lee* teaches on column 6, lines 59-63, that if a retransmission is detected, the layer 1 of the reception side restores/combines the received data repeatedly predetermined times using a maximal ratio combining (MRC) process.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, given these references, to combine the MRC teachings of *Lee* with the ARQ system of *Malkamaki* in order to increase the signal-to-noise ratio and improve the reliability of packet reception.

Regarding claim **4**, *Malkamaki* also does not teach the combining of the received packet with the previous packet according to a signal-to-noise ratio (SNR) symbol of the received packet and the previous packet.

However, *Lee* teaches repeated transmission based upon signal-to-noise ratio as spoken of on column 7, lines 21-26.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, given these references, to combine the MRC teachings of *Lee* with the ARQ system of *Malkamaki* in order to increase the signal-to-noise ratio and improve the reliability of packet reception.

Regarding claim **6**, *Malkamaki* further teaches the combining of data blocks within the receiving terminal 12 (access point) shown in Figure 1.

Regarding claim **7**, *Malkamaki* further teaches the combining of data blocks within the receiving terminal 12 (mobile station) shown in Figure 1.

Regarding claim **16**, *Malkamaki* teaches a system (apparatus) in Figure 1 for combining data blocks.

Malkamaki also teaches the reception of various physical channels used to convey data blocks (received packet) and respective sequence numbers by a PHY module 12c (first storage medium) as spoken of on page 3, paragraph 34.

Malkamaki also teaches the determining of whether a received data block (packet) is a retransmitted data block by comparison of the sequence number (field) of the received data block to sequence numbers (corresponding field) of previously received data blocks stored in a soft combining buffer (second storage medium) as spoken of on page 4, paragraph 36, lines 13-26.

Malkamaki also teaches that if the terminal's physical layer (adder) determines that the data block is a retransmitted data block, then it combines the retransmitted data block and the earlier received data block as spoken of on page 4, paragraph 36, lines 23-26.

Malkamaki does not explicitly teach a demodulator used for demodulation of received packets.

However, *Malkamaki* does teach the use of an appropriate modulation and coding scheme (MCS) for data to be transmitted to a user terminal as spoken of on page 4, paragraph 35, which implies that modulation and demodulation of data is performed.

Also, *Lee* teaches a demodulation unit 222 (demodulator) in Figure 2 that demodulates received radio data as spoken of on column 4, lines 48-51.

These references are considered to be analogous art in that they are both concerned with data recovery using ARQ.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, given these references, to combine the demodulation teachings of *Lee* with the system of *Malkamaki* in order to provide a well-known signal processing method in wireless communication.

Regarding claim **17**, *Malkamaki* does not explicitly teach an antenna used for receiving the transmission of the data packet and the previous packet.

However, *Malkamaki* does teach a wireless communication system using radio link control (RLC) in Figure 1, which implies the use of antennas for communication.

Therefore, at the time of the invention it would have been obvious to someone of ordinary skill in the art, given the system of *Malkamaki*, to use antennas for wireless communication.

Regarding claim **18**, *Malkamaki* does not teach that the adder uses a maximum ratio combining method.

However, *Lee* teaches on column 6, lines 59-63, that if a retransmission is detected, the layer 1 of the reception side restores/combines the received data repeatedly predetermined times using a maximal ratio combining (MRC) process.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, given these references, to combine the MRC teachings of *Lee* with the ARQ system of *Malkamaki* in order to increase the signal-to-noise ratio and improve the reliability of packet reception.

Regarding claim **19**, *Malkamaki* also does not teach the combining of the received packet with the previous packet according to a signal-to-noise ratio (SNR) symbol of the received packet and the previous packet.

However, *Lee* teaches repeated transmission based upon signal-to-noise ratio as spoken of on column 7, lines 21-26.

At the time of the invention, it would have been obvious to someone of ordinary skill in the art, given these references, to combine the MRC teachings of *Lee* with the ARQ system of *Malkamaki* in order to increase the signal-to-noise ratio and improve the reliability of packet reception.

Regarding claim **24**, *Malkamaki* further teaches the determining of whether a received data block (packet) is a retransmitted data block by comparison of the sequence number (sequence control field) of the received data block to sequence numbers (sequence control field) of previously received data blocks stored in a soft combining buffer (second storage medium) as spoken of on page 4, paragraph 36, lines 13-26.

Regarding claims **25 and 26**, *Malkamaki* further teaches the determining of whether a received data block (packet) is a retransmitted data block by comparison of the sequence number (corresponding MAC frame) of the received data block to sequence numbers (corresponding MAC frame) of previously received data blocks stored in a soft combining buffer (second storage medium) as spoken of on page 4, paragraph 36, lines 13-26.

Allowable Subject Matter

4.   Claims **9-15** are allowable over the prior art of record.

5.   Claims **2, 3, 8, and 21-23** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6.   The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims **2, 3, 8-15, and 21-23,** these claims are allowable for the reasons indicated in the previous Office Action.

Response to Arguments

7.   Applicant's arguments filed 10/20/06 have been fully considered but they are not persuasive.

Regarding claim **1**, Applicant argues that *Malkamaki* does not teach "determining whether the received packet is a retransmitted packet by comparing a field of the received packet with a corresponding field of a previous packet stored in a second storage medium".

However, as provided above, it is held that the sequence number comparison taught in *Malkamaki* teaches this limitation. Although the sequence number field taught in *Malkamaki* is transmitted in a channel separate from the corresponding data block, the sequence number is still "a field" of the received packet that is compared with a sequence number (corresponding field) of a previously received data block stored in a soft combining buffer as spoken of on page 4, paragraph 36, lines 13-26.

Therefore, it is held that *Malkamaki* teaches this limitation.

Conclusion

8.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. Love et al. (U.S. 7,075,887), Seidel et al. (U.S. 7,061,915), and

Kroon (U.S. 6,856,599) are additional references considered pertinent to this

application.

9.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Michael J. Moore, Jr. whose telephone number is (571)

272-3168. The examiner can normally be reached on Monday-Friday (8:00am -

4:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Seema S. Rao can be reached on (571) 272-3174. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael J. Moore, Jr.
Examiner
Art Unit 2616

mjm MM

SEEMA S. RAO 1/5/07
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